

REMARKS

After entry of this Amendment, claims 1-4, and 6 remain pending in the application. Independent claim 1 is currently amended to specify that “n” is an integer of 5 to 100, support for which can at least be found in paragraph [0011] on page 4 of the original application as filed. Claims 5 and 7 were previously cancelled.

Claims 1 and 6 stand rejected under 35 USC §103(a) over Kleyer et al. (USPN 6,361,716). Claims 1-4 and 6 stand rejected under 35 USC §103(a) over Enami et al. (USPN 6,380,301). The Applicants respectfully submit that the Examiner’s rejection of independent claim 1 as obvious over Kleyer et al. are overcome through the instant amendments to independent claim 1, and that the rejection of independent claim 1 as obvious over Enami et al. is overcome notwithstanding the amendments to independent claim 1 for the reasons as set forth below.

In view of the amendments to independent claim 1, it is now clear that there is a minimum of 7 silicon atoms that are **always** present in the silicone oils described by (A₁) and (A₃) (at least five silicon atoms are contributed from the group whose presence depends upon the value of “n”, at least one additional silicon atom is contributed depending upon the value of “c” or “e” in formulas (A₁) and (A₃), respectively, and a further silicon atom is contributed which is bonded to the alkoxy group(s)). Depending upon the particular embodiment, there may be more silicon atoms present in the silicone oils described by (A₁) and/or (A₃). In fact, the specific Examples included in the application each make use of silicone oils having more than 7 silicon atoms per molecule. Further, Comparative Example 2 illustrates an inability to even

make a homogeneous heat conductive silicone grease when a silicone oil having a total of only 5 silicon atoms is used, while homogeneous heat conductive silicone grease was successfully made under the same conditions as Comparative Example 2 using silicone oils that are substantially identical to the silicone oils used in Comparative Example 2 but that have more silicon atoms (see, e.g., Examples 1 and 3). As such, the Examples and Comparative Examples of the instant application clearly illustrate the effect of the number of silicon atoms in silicone oils on the ability to even form homogeneous heat conductive silicone grease. Thus, it is clear that the instant amendments made to independent claim 1 significantly distinguish the instant invention from the prior art, including the teachings of Kleyer et al., in particular, on the basis of differences in the number of silicon atoms present in the silicone oils of the instant claims versus the number of silicon atoms present in the particular silicone oils taught by Kleyer et al. Also notable is the fact that the homogeneous heat conductive silicone grease of Examples 1 and 3, which do **not** have unsaturated functional groups present therein, have inferior cone penetration consistency and/or thermal conductivity as compared to silicone grease prepared with the silicone oils described by (A₁) and (A₃) (see, e.g., Examples 2, 10, and 12 as compared to Examples 1 and 3).

In view of the foregoing, and as set forth in further detail below, the Applicants respectfully submit that independent claim 1, as amended, is both novel and non-obvious over the teachings of Kleyer et al. Further, the Applicants respectfully submit that independent claim 1 is both novel and non-obvious over Enami et al. notwithstanding the instant amendments to

the claims due to the failure of Enami et al. to teach a silicone oil represented by either (A₁) or (A₃) as claimed in independent claim 1 of the instant claims.

Rejection of Claims 1 and 6 Under 35 USC §103(a) Over Kleyer et al.

The Applicants respectfully submit that, in view of the amendments to independent claim 1, Kleyer et al. does **not** teach a composition comprising a silicone oil represented by either (A₁) or (A₃) in the instant claims. As the Examiner has recognized, independent claim 1 claims a composition comprising (A) a silicone oil and (B) a heat conductive filler. The silicone oils suitable for (A) are limited to those claimed as (A₁) and (A₃) in claim 1. To establish the prior rejections under 35 USC §103(a) that rely on Kleyer et al., the Examiner has relied upon the teachings in Kleyer et al. of a composition including an organopentasiloxane and various metallic fillers such as silver (see column 11, lines 24-65 and column 16, lines 22-26 of Kleyer et al., as well as Comparative Example 1). The organopentasiloxane is included in the compositions of Kleyer et al. as one component in a preferred adhesion promoter package that includes other adhesion promoters, and the Examiner has equated the organopentasiloxane to the silicone oil represented by (A₁) in the instant claims. However, in view of the instant amendments to independent claim 1 that result in the silicone oil represented by (A₁) **always** having at least 7 silicon atoms (as described above), the Applicants respectfully submit that the organopentasiloxane can no longer be equated to the silicone oil represented by (A₁).

The Applicants further submit that it would **not** be obvious to a person of ordinary skill in the art to modify the organopentasiloxane of Kleyer et al. to find a teaching in the prior art of silicone oil represented by (A₁) in the instant claims. As the Examiner is aware, *Graham v.*

John Deere provides the basic framework for performing the obviousness inquiry, and the Supreme Court has recently reaffirmed the standards set forth in *Graham v. John Deere* in the decision of *KSR International Co. v. Tele-flex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007). In the wake of *KSR*, it is clear that many established tests that have been used in the past to prove or disprove obviousness of claims, while still useful to perform the obviousness inquiry, cannot be rigidly applied. MPEP 2141(IL) rightly summarizes the more global approach that is to be taken with regard to the obviousness inquiry in the wake of *KSR* by indicating that “the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art **would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge**” (emphasis added).

In the context of the instant set of facts, it is clear that one of ordinary skill in the art would **not** have known to make silicone grease including silicone oils represented by (A₁) in independent claim 1 as amended based upon the teachings of Kleyer et al. alone. Further, the Applicants respectfully submit that one of skill in the art would **not** have reasonably expected to have been able to modify the organopentasiloxanes taught by Kleyer et al. to arrive at silicone oils represented by (A₁) in independent claim 1 as amended. It is notable that, within the teachings of Kleyer et al., the organopentasiloxanes are the only relevant siloxanes taught therein with regard to silicone oils represented by (A₁) in independent claim 1; all other siloxanes taught by Kleyer et al. are substantially different than the silicone oils represented by (A₁) in independent claim 1, which the Examiner has already recognized. It is also notable that

Kleyer et al. **specifically** limits the siloxanes to organopentasiloxanes, i.e., siloxanes having **exactly** 5 silicon atoms. Further illustration of the organopentasiloxanes taught by Kleyer et al. is provided in column 11, line 28 of Kleyer et al.

There are no teachings within Kleyer et al. to suggest that anything *other* than organopentasiloxanes would be suitable for the purposes thereof. The organopentasiloxanes are taught for use as adhesion promoters, with specific organopentasiloxanes listed in column 11, lines 54-58 that are noted for superior adhesion to metals commonly used in the fabrication of electronic devices. Based upon the teachings of Kleyer et al., the usefulness of the organopentasiloxanes is solely attributable to the adhesion-promoting abilities thereof, and Kleyer et al. has specifically and exclusively identified siloxanes that have **exactly** 5 silicon atoms as being suitable for providing the necessary adhesion-promoting abilities for purposes of the invention of Kleyer et al.

As set forth above in the context of the invention now claimed in independent claim 1, the instant inventors have found that silicone oils represented by (A₁) and/or (A₃) provide superior results relative to cone penetration consistency and/or thermal conductivity of silicone grease including the silicone oil(s) as claimed in independent claim 1. As such, the usefulness of the silicone oils claimed in independent claim 1 of the instant claims is attributable to a different benefit or effect of the silicone oils on the silicone greases compared to the benefit or effect of the organopentasiloxanes of Kleyer et al.

While the Applicants recognize that purposes for which an element in a composition claim is used are immaterial for purposes of novelty analyses under 35 USC §102, such

considerations carry much weight in the obviousness inquiry due to the focus on what one of skill in the art would reasonably have been expected to do in view of knowledge available in the art at the time of the invention at issue. In particular, based on the different purposes for which the silicone oils claimed in independent claim 1 of the instant claims are used (i.e., imparting superior cone penetration consistency and/or thermal conductivity to silicone grease) versus the purposes of the organopentasiloxanes of Kleyer et al. (i.e., promoting adhesion to metals commonly used in the fabrication of electronic devices), and based on the stated superiority of organopentasiloxanes in Kleyer et al. with regard to adhesion promotion and the lack of any teachings of other suitable siloxanes for such purposes other than organopentasiloxanes, it is clear that one of ordinary skill in the art would not reasonably have been expected to modify the organopentasiloxanes of Kleyer et al. in the ways necessary to arrive at the silicone oils represented by (A₁) as claimed in the instant independent claim 1. As such, the Applicants respectfully submit that independent claim 1, as amended, is both novel and non-obvious in view of the teachings of Kleyer et al. (as are claims 2-4 and 6 that depend from independent claim 1).

Rejections of Claims 1-4 and 6 Under 35 USC §103(a) Over Enami et al.

Relative to these rejections, the Applicants respectfully submit that the Examiner has overlooked a pivotal distinction between the oligosiloxanes represented by (ii) as taught by Enami et al. and the silicone oils represented by (A₁) of independent claim 1 of the instant claims. In particular, the oligosiloxanes represented by (ii) as taught by Enami et al. are explicitly taught to be free of silicon-bonded aliphatically unsaturated groups (see the abstract of

Enami et al. relative to the description of R², as well as column 7, lines 51-59 and column 8, lines 40-65). Conversely, the silicone oils represented by (A₁) of independent claim 1 of the instant claims **always** have at least one hydrocarbon group with an aliphatically unsaturated bond (based on the values of “a” and “m” and in consideration of the claimed proviso that “m” is 1 or greater when “a” is 0). As shown in the Examples and as addressed above, the instantly claimed silicone grease including silicone oils represented by (A₁) that have the unsaturated functionality exhibit superior cone penetration consistency as compared to similar silicone oils that do not have the unsaturated functionality (see, e.g., Example 5 of the instant application as compared to Example 8). The demonstrated superiority of the silicone oils represented by (A₁) that have the unsaturated functionality, in combination with the explicit teachings of Enami et al. that the oligosiloxanes represented by (ii) are free of silicon-bonded aliphatically unsaturated groups, strongly supports the Applicants’ position that a person of ordinary skill in the art would **not** reasonably have been expected to prepare silicone grease including the silicone oils represented by (A₁) based upon the teachings of Enami et al. alone. As such, the Applicants respectfully submit that independent claim 1, even prior to the instant amendments, is both novel and non-obvious in view of the teachings of Enami et al. (as are claims 2-4 and 6 that depend from independent claim 1).

In view of the foregoing, the Applicants respectfully submit that independent claim 1, as well as claims 2-4 and 6 that depend therefrom, is in condition for allowance, which allowance is respectfully requested.

This response is timely filed; thus, it is believed that no further fees are presently due. However, if necessary, the Commissioner is authorized to charge Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys, P.C. for any additional fees or to credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS

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